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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,579	09/20/2006	Eiichi Kaji	2006_1387A	1456
513 7590 04/29/2009 WENDEROTH, LIND & PONACK, L.L.P. 1030 15th Street, N.W., Suite 400 East Washington, DC 20005-1503				
EXAMINER				
LU, C'CAIXIA				
ART UNIT		PAPER NUMBER		
1796				
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04/29/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/593,579

Applicant(s)

KAJI ET AL.

Examiner

Caixia Lu

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4, 5, 8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) 4, 5, 8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 19, 2009 has been entered.

Specification

2. The abstract of the disclosure is objected to because typographic error in indicated line 11, the term "aliphatic of aromatic carboxylic acid" should be replaced with "aliphatic or aromatic carboxylic acid". Correction is required.

Claim Rejections - 35 USC § 112

3. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In (ii) of claim 1, the limitation of "a mole fraction of methyl groups originating from trimethylaluminum" is new matter. The application as originally filed only support the limitation of "a mole fraction of methyl groups originating from aluminoxane part". Furthermore, the originally filed limitation (ii) as whole does not make much sense in view of Examples 1-5 disclosed in specification since no

aluminoxane is used as a starting material or catalyst in the polymethylaluminoxane preparation processes.

Claim Rejections - 35 USC §103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claim 1 is rejected under 35 U.S.C. 103(a) as obvious over Smith et al. (US 5,831,109).

Smith's Examples 2 and 4 demonstrate the preparation of the polymethylaluminoxane (PMAO) composition substantially free of trimethylaluminum (TMAI) by reacting TMAI and benzoic acid in toluene with catalytic amount of polyaluminoxane (PMAO). It is noted that Smith does not expressly disclose the viscosity of the PMAO prepared from the Examples. However, in Smith's PMAO preparation process, the reaction between TMAI and benzoic acid is quantitative, therefore, the molecular weight of PMAO can be controlled by varying the ratio of TMAI to benzoic acid. As the TMAI/benzoic acid increases, the molecular weight of PMAO decreases. It is noted that the ratios of TMAI/O of benzoic acid in Smith's Examples 2 and 4 are 1.27 and 1.25 respectively, which are about the same as the TMAI/O ratio of 1.26 of applicants' Example 5. One would have expected the molecular weight of Smith's PMAO to be inherently identical or substantially identical to that of applicants' Example 5. As shown in applicants' Remark of February 19, 2009, the aluminum concentrations of the generated PMAO reaction mixture are 3.25 wt% and 15.5 wt% for Smith's Examples 2 and 4 respectively, apparently, the amount of toluene solvent used

in the PMAO preparation process is not crucial, as long as enough is used to keep all of the reactants and product in solution and at least the amount of toluene can be adjusted to provide the aluminum concentration of the generated PMAO reaction mixture ranging from 3.25 wt% to 15.5 wt%. Therefore when suitable amount of toluene is used in the polymethylaluminoxane preparation process, the aluminum concentrations of the generated PMAO reaction mixture can be adjusted to about 9 wt% in the reaction media, and the corresponding viscosity of PMAO product mixture would be expected to inherently about 2.0×10^{-3} Pa.sec at 40°C because such a PMAO composition is substantially identical to that of applicants' Example 5.

It is noted that Smith does not expressly use toluic acid; however, Smith does expressly disclose that non-limited carboxylic acid can be used in the in the PMAO preparation process. It would been obvious to use any carboxylic acid such as toluic acid in the PMAO preparation process since toluic acid is inexpensively commercially available and have very good solubility in toluene.

Thus, it would have been obvious to a skilled artisan at the time the invention was made to modify Smith's disclosure of Examples 2 and 4 by replacing toluic acid with benzoic acid and using suitable amount of toluene to provide PMAO reaction mixture with aluminum concentrations of the generated PMAO reaction mixture adjusted to about 9 wt% in the reaction media since such is within the scope of Smith's teaching and in the absence of any showing criticality and unexpected results.

Response to Arguments

6. Applicant's arguments with respect to the previous rejection have been considered but are moot in view of the new ground(s) of rejection.

Applicants have provided a brochure issued by Akzo Nobel Corp. to show that PMAO with a high viscosity of 55 mpa.s at 40°C can provide a high stability for several months at room temperature. However, such a showing is not relevant to viscosity of the instant claims since the viscosity of the instant claims is a toluene solution of aluminoxane while the PMAO of Akzo Nobel Corp. does not contain any toluene solvent. The solvent such as toluene have very low viscosity, the viscosity of PMAO toluene solution depends on both the molecular weight of PMAO and the concentration of PAMO in toluene.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (571) 272-1106. The examiner can normally be reached on 9:00 a.m. to 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Caixia Lu/
Primary Examiner
Art Unit 1796